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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,095	06/29/2005	Yoshiharu Nakajima	SON-2899	6128

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EXAMINER

RAINEY, ROBERT R

ART UNIT	PAPER NUMBER
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2629

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/541,095

Applicant(s)

NAKAJIMA ET AL.

Examiner

Robert R. Rainey

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/30/2007; 2/15/2006; 6/29/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1, 3 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,441,758 to *Koyama et al.* ("*Koyama*") in view of U.S. Patent No. 6,496,130 to *Nagao* ("*Nagao*").

As to **claim 1**, *Koyama* discloses a flat display apparatus having a display unit (see for example Fig. 24) and driving circuits formed integrally on a substrate (see for example column 7 lines 22-25 and column 11 lines 35-45), said display unit having pixels laid out in a matrix, said driving circuits driving the pixels of said display unit, said flat display apparatus comprising: a gradation setting circuit which, as part of said driving circuits, is disposed along one side of said display unit and which sets gradations of the pixel elements (see for example the Fig. 12).

Koyama does not expressly disclose that the first gradation setting circuit is for a green color and a second gradation setting circuit which, as part of said driving circuits, is disposed along another side of said display unit and which sets gradations of the pixels for red and blue colors, said another side being positioned opposite to said one side.

Nagao discloses a second gradation setting circuit which, as part of said driving circuits, is disposed along another side of said display unit and which sets gradations of a second set of pixel elements, said another side being positioned opposite to said one side (see for example Fig. 3 in which block 301 contains the first gradation setting circuit and block 302 contains the second gradation setting circuit).

Koyama and *Nagao* are analogous art because they are from the same field of endeavor, which is user interface displays.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to add a second gradation setting circuit as disclosed by *Nagao* to the display as disclosed by *Koyama*. The suggestion/motivation would have been to provide advantages such as to distribute the thermal load, or to provide more horizontal space for the circuit elements.

Koyama and *Nagao* disclose the claimed invention except for the assignment of the green pixel elements to a different gradation setting circuit than that of the red and blue pixel elements. It would have been obvious to one having ordinary skill in the art at the time the invention was made to assign the green pixel elements to a different gradation setting circuit than that of the red and blue pixel elements, since it has been held that rearranging parts of an invention involves only routine skill in the art *In re Japikse*, 86 USPQ 70. The suggestion/motivation would have been to provide advantages such as to allow

for a monochrome mode in which only the green is driven without powering all drive elements, or to allow for designers choice.

As to **claim 3**, in addition to the rejection of claim 1 over *Koyama* and *Nagao*, *Nagao* further discloses that said first gradation setting circuit sets the gradations of said pixels for said green color by selecting first reference voltages generated by a first reference voltage generation circuit disposed close to said first gradation setting circuit on said substrate; and wherein said second gradation setting circuit sets the gradations of said pixels for said red and blue colors by selecting second reference voltages generated by a second reference voltage generation circuit disposed close to second gradation setting circuit on said substrate (see for example Fig. 3 in which block 301 contains the first reference voltage generation circuit item 301-5 and block 302 contains the second reference voltage generation circuit).

Arguments for analogous art, obviousness and suggestion/motivation are the same as for the parent claim.

As to **claim 5**, *Koyama* discloses using a flat display apparatus having a display unit (see for example Fig. 24) and driving circuits formed integrally on a substrate (see for example column 7 lines 22-25 and column 11 lines 35-45), said display unit having pixels laid out in a matrix, said driving circuits driving the pixels of said display unit, said flat display apparatus comprising: a gradation

setting circuit which, as part of said driving circuits, is disposed along one side of said display unit and which sets gradations of the pixel elements (see for example the Fig. 12).

Koyama does not expressly disclose a portable terminal apparatus and that the first gradation setting circuit is for a green color and a second gradation setting circuit which, as part of said driving circuits, is disposed along another side of said display unit and which sets gradations of the pixels for red and blue colors, said another side being positioned opposite to said one side.

Nagao discloses a portable terminal apparatus (see for example Fig. 12A) and a second gradation setting circuit which, as part of said driving circuits, is disposed along another side of said display unit and which sets gradations of a second set of pixel elements, said another side being positioned opposite to said one side (see for example Fig. 3 in which block 301 contains the first gradation setting circuit and block 302 contains the second gradation setting circuit).

Koyama and *Nagao* are analogous art because they are from the same field of endeavor, which is user interface displays.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to add a second gradation setting circuit as disclosed by *Nagao* to the display as disclosed by *Koyama*. The suggestion/motivation would have been to provide advantages such as to distribute the thermal load, or to provide more horizontal space for the circuit elements.

Koyama and *Nagao* disclose the claimed invention except for the assignment of the green pixel elements to a different gradation setting circuit than that of the red and blue pixel elements. It would have been obvious to one having ordinary skill in the art at the time the invention was made to assign the green pixel elements to a different gradation setting circuit than that of the red and blue pixel elements, since it has been held that rearranging parts of an invention involves only routine skill in the art *In re Japikse*, 86 USPQ 70. The suggestion/motivation would have been to provide advantages such as to allow for a monochrome mode in which only the green is driven without powering all drive elements, or to allow for designers choice.

2. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,441,758 to *Koyama et al.* ("*Koyama*") in view of U.S. Patent No. 6,496,130 to *Nagao* ("*Nagao*") and further in view of U.S. Patent No. 5,228,120 to *Farr, deceased et al.* ("*Farr*").

As to **claim 2**, in addition to the rejection of claim 1 over *Koyama* and *Nagao*:

Koyama and *Nagao* do not expressly disclose that the number of gradations set by said first gradation setting circuit is greater than the number of gradations set by said second gradation setting circuit.

Farr discloses a display system and in particular display data comprising 6-bits green data, 5-bits blue data and 5-bits red data (see for example column 5 lines 16-25).

Koyama, *Nagao* and *Farr* are analogous art because they are from the same field of endeavor, which is user interface displays.

Koyama, *Nagao* and *Farr* disclose the claimed invention except for changing the gradations in the gradation circuits according to the number of required bits. It would have been obvious to one having ordinary skill in the art at the time the invention was made to changing the gradations in the gradation circuits according to the number of required bits, since it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. In re Karison, 136.USPQ 184. The suggestion/motivation would have been to reduce the size of the circuit elements (see for example column 2 line 66 to column 3 line 6).

Allowable Subject Matter

1. **Claim 4** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

2. The following is a statement of reasons for the indication of allowable subject matter: The prior art identified does not teach the assignment of two columns of selection transistors, i.e. the recited pairs arranged perpendicularly, to each green column and one column of selection transistors to each of the red and blue columns and placing the red and blue selection transistors on one side of the display and the green selection transistors on the other.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Application Publication No. 2003/0231153 to Seong et al. discloses separate RGB voltage generators and selectors with spatial separation of the generators and selectors.

U.S. Patent Application Publication No. 2003/0189541 to Hashimoto discloses separate RGB voltage generators.

U.S. Patent No. 6,788,298 to Kota et al. discloses different driver types for one color versus two others.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert R. Rainey whose telephone number is (571)

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270-3313. The examiner can normally be reached on Monday through Friday 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RR/


AMARE MENGISTU
SUPERVISORY PATENT EXAMINER